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CLERK US DISTRICT COURT
WESTERN DISTRICT OF TEXAS
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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

USB BRIDGE SOLUTIONS, LLC,	§	
PLAINTIFF,	§	
	§	
V.	§	CAUSE NO. 1-17-CV-001158-LY
	§	
BUFFALO INC. AND BUFFALO	§	
AMERICAS, INC.,	§	
DEFENDANT.	§	

USB BRIDGE SOLUTIONS, LLC,	§	
PLAINTIFF,	§	
	§	
V.	§	CAUSE NO. 1-17-CV-01159-LY
	§	
AVANT TECHNOLOGY, INC. D/B/A	§	
EDGE MEMORY,	§	
DEFENDANT.	§	

MEMORANDUM OPINION AND ORDER REGARDING CLAIM CONSTRUCTION

Before the court in the above-styled and numbered causes are Plaintiff USB Bridge Solutions, LLC's Opening Claim Construction Brief filed October 12, 2018 (Doc. #35); Defendants' Opening Claim Construction Brief filed October 12, 2018 (Doc. #36); Plaintiff USB Bridge Solutions, LLC's Responsive Claim Construction Brief filed November 2, 2018 (Doc. #44); Defendants' Responsive Claim Construction Brief filed November 2, 2018 (Doc. #45); the parties' Joint Claim Construction Statement filed October 5, 2018 (Doc. #33); and the parties' claim-construction presentations.

Defendants, as referred to in this Opinion and Order, are the defendants in both causes before the court for claim construction: Buffalo Inc., Buffalo Americas Inc., and Avant Technology, Inc. D/B/A Edge Memory.

The court held a claim-construction hearing on December 18, 2018. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). After considering the patents and their prosecution history, the parties' claim-construction briefs, the applicable law regarding claim construction, and argument of counsel, the court now renders its order with regard to claim construction.

I.   Introduction

The court renders this memorandum opinion and order to construe the claims of United States Patent No. 7,231,485 ("the '485 Patent") entitled "Universal Serial Bus (USB) Interface for Mass Storage Device." Plaintiff USB Bridge Solutions, LLC ("USB Bridge") is the owner of the '485 Patent, which relates to technologies for driving mass storage devices. Specifically, the asserted claims of the '485 Patent are directed to devices and methods for communicating between a host motherboard and one or more mass storage devices. USB Bridge alleges that Defendants infringe the claims of the '485 Patent through making, using, offering for sale, selling, or importing infringing products.

II.   Legal Principles of Claim Construction

Determining infringement is a two-step process. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996) ([There are] two elements of a simple patent case, construing the patent and determining whether infringement occurred. . . .). First, the meaning and scope of the relevant claims must be ascertained. *Id.* Second, the properly construed claims must be compared to the accused device. *Id.* Step one, claim construction, is the current issue before the court.

Claim construction is exclusively for the court to determine. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 835 (2015) (quoting *Markman*, 517 U.S. at 372). The words of a

claim are generally given their ordinary and customary meaning. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). [T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention . . . *Id.* at 1313. The person of ordinary skill in the art is deemed to have read the claim term in the context of the entire patent. *Id.* Therefore, to ascertain the meaning of a claim, a court must look to the claim, the specification, and the patent's prosecution history. *Id.* at 1314–17; *Markman*, 52 F.3d at 979.

Claim language guides the court's construction of a claim term. *Phillips*, 415 F.3d at 1314. [T]he context in which a term is used in the asserted claim can be highly instructive. *Id.* Other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent . . . *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.* at 1314–15.

Claims must also be read in view of the specification, of which they are a part. *Markman*, 52 F.3d at 979. [T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term. *Phillips*, 415 F.3d at 1315 (quoting *Vitronics*, 90 F.3d at 1582). In the specification, a patentee may define a term to have a meaning that differs from the meaning that the term would otherwise possess. *Id.* at 1316. In such a case, the patentee's lexicography governs. *Id.* The specification may also reveal a patentee's intent to disavow claim scope. *Id.* Such intention is dispositive of claim construction. *Id.* Although the specification may indicate that a certain embodiment is preferred, a particular embodiment appearing in the specification will not be read into the claim

when the claim language is broader than the embodiment. *Electro Med. Sys., S.A. v. Cooper Life Scis., Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

The prosecution history is another tool to supply the proper context for claim construction because it demonstrates how the inventor understood the invention. *Phillips*, 415 F.3d at 1317. A patentee may also serve as his own lexicographer and define a disputed term in prosecuting a patent. *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004). Similarly, distinguishing the claimed invention over the prior art during prosecution indicates what a claim does not cover. *Spectrum Int'l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1378–79 (Fed. Cir. 1988). The doctrine of prosecution disclaimer precludes a patentee from recapturing a specific meaning that was previously disclaimed during prosecution. *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). A disclaimer of claim scope must be clear and unambiguous. *Middleton, Inc. v. 3M Co.*, 311 F.3d 1384, 1388 (Fed. Cir. 2002).

Although less significant than the intrinsic record in determining the legally operative meaning of claim language, the court may rely on extrinsic evidence to shed useful light on the relevant art. *Phillips*, 415 F.3d at 1317 (internal quotations omitted). Technical dictionaries and treatises may help the court understand the underlying technology and the manner in which one skilled in the art might use a claim term, but such sources may also provide overly broad definitions or may not be indicative of how a term is used in the patent. *See Id. at* 1318. Similarly, expert testimony may aid the court in determining the particular meaning of a term in the pertinent field, but conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. *Id.* Generally, extrinsic evidence is less reliable than the patent and its prosecution history in determining how to read claim terms . . . *Id.* Extrinsic

evidence may be useful when considered in the context of the intrinsic evidence, *Id. at* 1319, but it cannot alter a claim construction dictated by a proper analysis of the intrinsic evidence, *On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmbH*, 386 F.3d 1133, 1139 (Fed. Cir. 2004). To the extent the court make[s] subsidiary factual findings about th[e] extrinsic evidence, the court construes the claims in light of those factual findings. *Teva*, 135 S. Ct. at 841.

III.   Discussion

A.   *Agreed Constructions*

The parties do not agree on the construction of any terms.

B.   *Disputed Terms*

The parties dispute the construction of 19 terms. Each disputed term is discussed separately.

1. "ATA/ATAPI signals"

The parties' proposed constructions of this term, as used in Claims 1, 4, 7, 10, 11, 12, and 15 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"AT Attachment signals used in the physical, electrical, transport, and command protocols for the internal attachment of storage devices" Where "ATAPI" means "AT Attachment with Packet Interface"	"Parallel AT attachment interface signals"

USB Bridge argues that the '485 Patent does not define "ATA/ATAPI signals," so a person of ordinary skill in the art would consult the ATA/ATAPI family of standards to determine the meaning of the term. USB Bridge's construction is based on a phrase taken verbatim from the relevant family of industry standards. Defendants assert that "ATA/ATAPI

signals" must be defined as "parallel AT attachment interface signals," because serial ATA technology was: (1) only in its earliest stages of development when the patent application was filed, (2) not mentioned explicitly or implicitly in the patent, and (3) not part of the ATA standard at the time of patenting.   USB Bridge responds that Defendants' construction improperly imposes claim limitations that are otherwise absent.   The court agrees with USB Bridge.

Defendants acknowledge that serial ATA was known in 2000-2001 although they contend that it was in its infancy and was not part of the ANSI definition.   Defendants' own expert opined that serial ATA was under development and its existence was known in the industry and to persons of ordinary skill by at least February 2000.   Defendants' expert also stated that by the time the non-provisional application for the '485 Patent was filed on November 16, 2001, the first specification setting a standard for SATA had already been publicly disclosed and was known to those of skill in the art.

The court finds *SuperGuide Corp. v. DirecTV Enterprises, Inc.* to be analogous to the instant case. 358 F.3d 870, 876 (Fed. Cir. 2004). In *SuperGuide*, the disagreement centered on the term "regularly received television signal" and whether that included both analog and digital signals.   At the time the patent application was filed, analog was the dominant format of video data, but those skilled in the art would have known of the existence of digital video data at the time. *Id. at* 879. "[C]laim language does not limit the disputed phrases to any particular type of technology or specify a particular type of signal format, such as analog or digital. Indeed, neither 'analog' nor 'digital' appears in any of the asserted claims." *Id. at* 878. Ultimately, the *SuperGuide* court held, "[i]t is irrelevant that the patentees did not argue during prosecution of the . . . patent that 'regularly received television signal' also included digital technology because

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the absence of such an argument does not necessarily indicate a clear and deliberate disavowal."
Id. at 881.

Similarly, in this case, parallel ATA was the dominant signal used at the time of patent application, but serial ATA was already under development and was known to persons of ordinary skill. In addition, neither "parallel" nor "serial" appears in any of the claims. USB Bridge's failure to argue that "ATA signals" includes "serial ATA" during prosecution of the patent is irrelevant, because the absence of such an argument does not necessarily indicate a clear and deliberate disavowal. As such, it would be improper to limit ATA signals to solely "parallel" signals.

Defendants also contend that all the disclosed embodiments in the '485 Patent support only parallel ATA signals, not serial ATA signals. USB Bridge counters that those are preferred embodiments and claim language should not be limited by them. It is "not enough that the only embodiments, or all of the embodiments, contain a particular limitation" when reading limitations into a claim term. *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012). It would be improper to limit the patent only to parallel ATA signals solely because all of the disclosed embodiments share that limitation.

Therefore, the court concludes the construction of "ATA/ATAPI signals" to be: **AT Attachment signals used in the physical, electrical, transport, and command protocols for the internal attachment of storage devices.**[1]

2. "embedded commands [in the ATA/ATAPI signals]"

The parties' proposed constructions of this term, as used in Claims 1, 7, 10, 12, and 16 of the '485 Patent, are listed in the following table:

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[1] Throughout, the **bolded** claim terms indicate the court's adopted construction.

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"commands included [as a value] in the ATA/ATAPI signals"	Indefinite Alternatively, "command instructions expressed by the parallel ATA/ATAPI signals received from the mass storage device to direct the operation of the bridging circuit"

USB Bridge asserts that one skilled in the art would understand "embedded commands" with reasonable certainty, with the word "embedded" naturally meaning "included in something else." USB Bridge also represented at the claim-construction hearing that the construction "commands included in the ATA/ATAPI signals" was acceptable without "as a value." Defendants argue that the term is indefinite. The court agrees with USB Bridge.

First, Defendants note that the term "embedded commands" does not appear anywhere in the specification. Rather, Defendants point to the fact that the patent only references "embedded control information" one time in the specification: "[t]he ISD300 can be configured to receive direction from the hard drive, such as *embedded control information*, that tells the chip what to do with the information once it has passed through the translation bridge." '485 Patent, 4:35–38. According to both sides' experts, the use of "embedded control information" is essentially the same as "embedded command." The court moves forward with the assumption that "embedded control information" is interchangeable with "embedded command."

Then, the main disagreement turns on the term "commands." Defendants claim that a person of ordinary skill in the art would normally interpret a "command" to be an "instruction" to a processing unit. However, they argue that "commands" and "instructions" would be useless and ineffective because the specification states that "[t]he ISD300 can perform the translation function without . . . any code running inside of it." '485 Patent, 4:31–34. Defendants argue that

the patent does not make sense because there can be no "commands" or "instructions" if there is no code running. Thus, Defendants claim that because a person of ordinary skill in the art would interpret "command" to mean "instruction," that definition would not make sense in the context of the '485 Patent, which would render the term indefinite.

A claim is indefinite if it does not reasonably inform a person of ordinary skill in the art of the claim scope. *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1383–84 (Fed. Cir. 2005). "Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).

In this case, a person of ordinary skill in the art would not be confused at the meaning of "embedded commands," even taking into account the specification sentences that Defendants point to. The sentences in the specification referencing the ISD300 chip only appear in the description of Fig. 4 as a preferred embodiment. A person of ordinary skill, reading about the preferred embodiment, would not suddenly become confused about a well-defined term like "embedded commands." USB Bridge further stated that a person of ordinary skill would understand that the bridging circuit could operate in hardware or software. Just because the ISD300 chip does not require code, does not render the word "command" inconsistent, because there is another interpretation that reconciles the meaning (interpreting the bridging circuit as operating on hardware). Also, according to Defendants' own interpretation of "command" to mean "instruction," an interrupt (which is a type of command sent by mass storage devices) would qualify as an "instruction" from the mass storage device. Therefore, one skilled in the art would understand the term "embedded commands" with reasonable certainty.

At the claim-construction hearing, Defendants represented that they would not pursue the alternative construction and would instead only advance their claim that the term is indefinite. As such, the court does not address Defendants' alternative construction.

Therefore, the court concludes the construction of "embedded commands" to be: **commands included in the ATA/ATAPI signals**.

3. "state machine"

The parties' proposed constructions of this term, as used in Claims 1, 7, 10, 12, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"Sequential-logic system whose outputs depend on previous and present inputs"	Indefinite Alternatively, "a discrete sequential-logic component operating without any code running on it, that receives embedded commands in the ATA/ATAPI signals sent from the mass storage device"

A state machine is a common term among persons of ordinary skill in the art. USB Bridge's construction is basically the plain and ordinary language of the term. Defendants focus on the argument that the state machine is indefinite because the patent did not disclose how the state machine accomplishes the function of translating ATA/ATAPI signals into USB signals. However, patent validity arguments like lack of enablement and lack of written description are not proper during claim construction proceedings. *Evicam Int'l, Inc. v. Enf't Video, LLC, 2016 WL 6470967, at *14 (E.D. Tex. Nov. 2, 2016). See Phillips*, 415 F.3d at 1327 ("[W]e have certainly not endorsed a regime in which validity analysis is a regular component of claim

construction.).   The court agrees with USB Bridge that this is an enablement or written description argument and should not be addressed at the claim construction stage.

Further, Defendants argue that "state machine" is used inconsistently throughout the claims. For example, Defendants argue that in claims 10 and 12, the state machine is "responsive to embedded commands," whereas in claims 7 and 16 the state machine is "updated" in response to embedded commands. However, the Defendants' problem with this inconsistency is that there is nothing in the specification that explains how the state machine "responds to commands" or "updates in response to commands."   Again, this is an enablement or written description argument that should not be decided at the claim construction stage. The court finds the term not indefinite.

Defendants' alternative construction limits the "state machine" to those "without any code running on it," based on the description of Fig. 4 in the specification. "[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments." *Phillips*, 415 F.3d at 1323. The court agrees with USB Bridge that this is a preferred embodiment, and the claim language should not be limited by it. Further, one skilled in the art would understand that a "state machine" could be implemented in hardware or software. Those two lines of the specification stating that "[t]he ISD300 *can* perform the translation function without requiring any firmware within the chip" is further indication that it is a preferred embodiment. '485 Patent 4:31–32.

Defendants also raise the concern of prosecution history disclaimer. Defendants argue that when applicants stated that "Kobayashi does not teach such a state machine responsive to embedded commands in the ATA/ATAPI signals," they meant that the "state machine" claimed in the patent is not a sophisticated processor or code-based microprocessor like in the prior art.

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The court agrees with USB Bridge that the statement above did not concern whether the state machine included software or firmware.   The patentee made no clear and unambiguous disavowal, so prosecution history estoppel does not apply to limit the claims. *See Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016) ("Where the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations, we have declined to find prosecution disclaimer.").

The court concludes the construction of "state machine" to be: **Sequential-logic system whose outputs depend on previous and present inputs**.

4. "updating a state machine in response to embedded commands in the ATA/ATAPI signals" / "the state machine is updated in response to embedded commands in the ATA/ATAPI signals" / "the bridging circuit includes a state machine responsive to embedded commands in the ATA/ATAPI signals configured to translate the signals from the mass storage device motherboard into the USB signals" / "updating a state machine in the bridging chip in response to embedded commands in the signal from the mass storage device" / "a state machine responsive to embedded commands in the ATA/ATAPI signals "

The parties' proposed constructions of this term, as used in Claims 1, 7, 10, 12, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction necessary beyond "state machine" and "embedded commands" to the extent construction is required for those terms	Indefinite Alternatively, "Changing the status of the 'state machine' in response to 'embedded commands' in the 'ATA/ATAPI signals' received from the mass storage device."

USB Bridge argues that these terms simply refer to updating the status of the machine or the state of the machine. USB Bridge also argues that no construction is necessary beyond the three terms decided above. Both parties do not advance any new arguments that were not addressed in construing the first three terms. The court holds that this term is not indefinite, consistent with the court's holdings for the first three terms.

Regarding Defendants' alternative construction, the court agrees with USB Bridge that it introduces superfluous language that already exists in the claims or includes elements (and limitations) not present in the disputed terms. There is no need to add this extra language because it does not change the claims in any substantive way.

Therefore, the court concludes that **no construction of the claim term is necessary.**

5. "convert" / "converts" / "converting"

The parties' proposed constructions of this term, as used in Claims 1, 4, 5, 6, 11, 16, and 18 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required/plain and ordinary meaning	"To transform signals from one format to another"

The parties dispute whether the terms "convert" and "translate" (term 8) are interchangeable in the '485 Patent. USB Bridge contends that the patentee chose to use two different words for a reason and so they are not interchangeable. "In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings." *CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000). There is also no indication that the patentee intended the two words to have the same meaning. The court agrees and rejects Defendants' construction that "convert'

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and "translate" are interchangeable. However, although USB Bridge argues that no construction is necessary, it also contends that "translation" is always a subset of "conversion" in the context of the '485 Patent. The court does not agree with this interpretation. USB Bridge argues that their examples show that certain *components* like a "translation circuit" is a subset of "conversion logic." That is not the same as saying the verb "to translate" is always a subset of the verb "to convert." A person of ordinary skill in the art would be able to understand "convert" within the context of each claim with reasonable certainty. There is no need to also construe "translate" to always be a subset of "convert," especially since USB Bridge's argument is that no construction is necessary.

Therefore, the court concludes that **no construction is necessary, but the court does not hold that "translation" is always a subset of "conversion."**

6. "conversion logic configured to convert the ATA/ATAPI signals into USB signals"

The parties' proposed constructions of this term, as used in Claims 11 and 12 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"digital circuit configured to convert the ATA/ATAPI signals into USB signals"	Indefinite

USB Bridge argues that "conversion logic" is not indefinite because claim 11 is very specific about what the conversion logic includes, like "a serial interface engine," "an input/output interface," "a ram control circuit," "a global control circuit," "a translate circuit," and "a disk interface." USB Bridge also claims that Fig. 4 discloses all of those elements as well as any other ancillary components that may be part of the conversion.

However, Defendants argue that "conversion logic" only appears once in the specification stating: "The remaining chip components, such as the input/output interface 140, the RAM control circuit 144, the global control circuit 146, and the translate circuit (XLATE) 148 provide conversion logic and are used to buffer and convert the ATA/ATAPI signals into USB 2.0 signals." '485 Patent, 4:24–28. The court agrees that "conversion logic" is not defined in the patent. The only sentence in the specification referencing "conversion logic" states that "remaining chip components" are "used to buffer and convert" the signals, rather than the "conversion logic" doing the buffering and converting. Further, the role of "conversion logic" is unclear, because other components perform the conversion function. Sometimes the state machine converts, sometimes the bridging circuit does, and sometimes a combination of many other components performs the conversion function. However, the "conversion logic" is never explained to perform the conversion function. The patent does not explain what the "conversion logic" *is* or *what it does*, resulting in a person of ordinary skill in the art struggling to understand the meaning of the term with reasonable certainty.

Therefore, the court concludes the term "conversion logic configured to convert the ATA/ATAPI signals into USB signals" is **indefinite.**

7. "converting the ATA/ATAPI signals from the mass storage device into USB signals using the bridging circuit in response to the state machine"/ "the bridging circuit is configured to translate the ATA/ATAPI signals into USB 2.0 signals in response to the state machine" / "converting the signal from the mass storage device into a USB signal in response to the state machine"

The parties' proposed constructions of this term, as used in Claims 1, 10, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required	Indefinite

USB Bridge argues that no construction is required because all of the smaller included terms are addressed in pervious sections. Each of the terms "converting," "ATA/ATAPI signals," "bridging circuit," "state machine," and "translate" have all been construed previously. The court agrees that there is no need to revisit terms that have already been construed.

Defendants argue that the term is indefinite because the patent does not teach *how* the bridging circuit is configured to translate ATA/ATAPI signals into USB signals. Again, this is an enablement or written description argument that should not be decided at the claim construction stage. There is no dispute about the meaning or scope of the term, and a person of ordinary skill in the art would understand what the term means with reasonable certainty.

Therefore, the court concludes **no construction of the claim term is necessary**.

8. "translate the [] signals"

The parties' proposed constructions of this term, as used in Claims 7, 9, and 10 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"change or transform the [] signals"	"To transform signals from one format to another"

The parties do not appear to be in dispute about this term. USB Bridge represented at the claim-construction hearing that Defendants' construction is acceptable.

Therefore, the court concludes the construction of "translate the signals" to be: **to transform signals from one format to another.**

9. "a state machine configured to translate the ATA/ATAPI signals into the USB signal" / "a state machine responsive to embedded commands in the ATA/ATAPI signals configured to translate the signals from the mass storage device motherboard into the USB signals"

The parties' proposed constructions of this term, as used in Claims 7 and 10 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction necessary beyond "state machine," "embedded commands," "ATA/ATAPI signals," and "translate the [] signals," which are addressed in other sections of the brief	Indefinite

This term is a combination of the terms "translate," "state machine," "embedded commands," and "ATA/ATAPI signals," which are all terms that have been construed previously. Defendants contend that the term is indefinite because according to their expert, a state machine cannot perform the "data buffering" that translation requires. USB Bridge argues that Fig. 4 in the patent addresses the "data buffering" function. Fig. 4 includes a "BUFF_RAM," which is memory for buffering. There is no reason why a "state machine" could not buffer signals in the buffer RAM memory as shown in Fig. 4. The court agrees with USB Bridge that the term is not indefinite, consistent with the constructions of the terms previously addressed.

Therefore, the court concludes that **no further construction of the claim term is necessary.**

10. "input logic configured to receive an input signal [from a read unit of the mass storage device]"

The parties' proposed constructions of this term, as used in Claim 5 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"digital circuit configured to receive an input signal [from a read unit of the mass storage device]"	Indefinite

Defendants make the argument that the term is indefinite because "input logic" was limited during prosecution history to mean "ATA/ATAPI interface." Defendants argue that Fig. 4 numeral 110 in the patent refers to the "ATA/ATAPI interface," and in the prosecution history Fig. 4 numeral 110 referred to the "input logic." Therefore, Defendants argue that the terms must mean the same thing.

USB Bridge responds that numeral 110 in Fig. 4 can refer to more than one single component. USB Bridge expert stated that a person of ordinary skill in the art would understand numeral 110 to refer to the ATA/ATAPI interface as well as other components that can accomplish the input of signals from the mass storage device such as: buffers, repeaters, inverters, debug circuits, and monitoring circuits. Thus, "input logic" could refer to more than just the "ATA/ATAPI interface" and should not be equated.

Further, USB Bridge argues that differing labels of numeral 110 between the prosecution history and the patent do not amount to a clear and unambiguous disavowal required to narrow the construction of "input logic" to just "ATA/ATAPI interface." In addition, the prosecution history statements are too ambiguous to construe the two terms identically. *Avid Tech., Inc.,* 812 F.3d at 1045 ("Where the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations, we have declined to find prosecution disclaimer.") (internal

quotations omitted). Since there is a way to reconcile both labels of numeral 110, the term is not indefinite because "input logic" and "ATA/ATAPI interface" do not have the same meaning.

Further, USB Bridge argues that when the claims are read logically, a person of ordinary skill in the art would understand the meaning. Claim 5 recites a motherboard which comprises input logic and the bridging circuit. The mass storage device gives signals to the motherboard, where there are components which comprise input logic, that take the signal and pass it on to the bridging circuit which is spread out on the motherboard. Next, dependent claim 6 requires that the bridging circuit is a bridging chip. Then, dependent claim 7 recites that the bridging chip has its own ATA/ATAPI interface which interacts with the motherboard by receiving the ATA/ATAPI signals from the input logic. USB Bridge contends that following the independent and dependent claims logically would not result in any indefiniteness.

The court agrees that the term is not indefinite. However, USB Bridge also uses a contemporaneous dictionary definition to argue that a person of ordinary skill in the art would understand the term "logic" to refer to "digital circuit." The court does not see a reason to adopt USB Bridge's construction of "input logic" based on dictionary definitions to mean "digital circuit." "Input logic" is not confusing to a person of ordinary skill so no further construction of the term is necessary.

Therefore, the court concludes **no construction of the claim term is necessary**.

11. "an input/output interface coupled to the serial interface engine"

The parties' proposed constructions of this term, as used in Claim 5 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required/plain and ordinary meaning, where "coupled" means "connected or linked"	Indefinite

Both parties agree that a person of ordinary skill in the art would understand the meaning of the term "input/output interface." But Defendants' expert argues that when viewing the term in the context of the patent, that understanding would be lost because of the "unspecified role" and "unusual functionality" within the patent. The court agrees with USB Bridge that Defendants fail to provide any evidence as to why they consider the way the "input/output interface" is connected to other components is abnormal. An indefiniteness argument concerns whether a person of ordinary skill in the art would understand the scope of the claim with reasonable certainty. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Further, when "there is no dispute that the terms . . . have a meaning that is clear, settled, and objective in content. . . . That meaning leaves the relevant public with a firm understanding of the scope of the claim terms, unless something exceptional sufficiently supplants that understanding." *Ancora Techs., Inc. v. Apple, Inc.*, 744 F.3d 732, 737 (Fed. Cir. 2014). In this case, both parties agree that "input/output interface" has a clear, settled meaning and would thus leave the public with a firm understanding of the scope of the claim terms. Defendants have not pointed to anything exceptional that would supplant that understanding.

The court holds that the term is not confusing and has an accepted meaning to a person of ordinary skill in the art. Although USB Bridge argues that no construction is needed, USB Bridge also states that "coupled" should mean "connected or linked" such that an electrical or signal connection can be established. The court agrees that the term is not indefinite, and no

construction is needed, but the court declines to adopt this additional construction of the term "coupled."

Therefore, the court concludes **no construction of the claim term is necessary**.

12. "a ram control circuit coupled to the input/output interface"

The parties' proposed constructions of this term, as used in Claims 1, 5, 8, 11, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required/plain and ordinary meaning, where "coupled" means "connected or linked"	Indefinite

Defendants argue that this term is indefinite for the same reasons that were raised in term 11. Defendants claim that although "ram control circuit" has an accepted definition, the '485 Patent uses the term in an atypical manner. However, Defendants do not explain how the use of the term is abnormal. Defendants have not pointed to anything exceptional that would supplant that understanding of a clear, settled meaning. The court agrees that the term is not indefinite. The court still declines to adopt USB Bridge's additional construction of the term "coupled."

Defendants also contend that the patent does not describe *how* the ram control circuit operates with any of the devices. Again, this is an enablement or written description argument that should not be raised at the claim construction stage.

Therefore, the court concludes **no construction of the claim term is necessary**.

13. "a global control circuit" / "a global control circuit coupled to the input/output interface"

The parties' proposed constructions of this term, as used in Claims 1, 5, 8, 11, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required/plain and ordinary meaning, where "coupled" means "connected or linked"	Indefinite Alternatively, "a discrete component that coordinates all activity of the bridging circuit between a USB interface and mass storage device, specifically including the I/O interface and the disk interface, but cannot receive ATA/ATAPI signals from the mass storage device."

USB Bridge contends that the term is not indefinite because Defendants' expert uses the very term to define another term. Defendants' expert construes "disk interface" to mean "a circuit that . . . receives from, but is not able to transmit signals to, the *global control circuit* and the translate circuit." An expert's use of a term is an indication that the term is not indefinite. *Sonix Technology Co., Ltd. v. Publications Int'l, Ltd.*, 844 F.3d 1370, 1380 (Fed. Cir. 2017) ("Although Appellees are correct that application by the examiner and an expert do not, on their own establish an objective standard, they nevertheless provide evidence that a skilled artisan did understand the scope of this invention with reasonable certainty.").

Defendants also claim that the '485 Patent does not describe *how* the "global control circuit" works with the other three "remaining chip components" (input/output interface, RAM control circuit, translate circuit) to perform the function of converting ATA/ATAPI signals into USB 2.0 signals. '485 Patent, 4:24–28. This is again an enablement or written description argument that should not be decided at the claim construction stage. The court agrees that the

term is not indefinite. The court still declines to adopt USB Bridge's additional construction of

the term "coupled."

USB Bridge also contends that nothing in the '485 Patent or its prosecution history

overrides the plain and ordinary meaning of the term. A court may depart from the plain and

ordinary meaning of a claim term in only two instances: lexicography and disavowal. *Hill-Rom*

Servs., Inc. v. Stryker Corp., 755 F.3d 1367, 1371 (Fed. Cir. 2014). There is no evidence that the

patentee acted as his own lexicographer to define "global control circuit" in a specific way.

Therefore, to conclude that the term requires construction beyond its plain and ordinary meaning,

the court would need to find that "the specification [or prosecution history] makes clear that the

invention does not include a particular feature or is clearly limited to a particular form of the

invention." *Id.* at 1372 (internal citations and quotations omitted). Defendants cannot point to

any place in the specification or prosecution history that reads as a disclaimer or disavowal.

Defendants further contend that "global" means "of, relating to, or applying to a whole"

based on a dictionary definition, and "global control circuit" means a circuit that controls the

whole, or entire operation, of whatever it is in. USB Bridge counters that in view of the

specification and the claims of the '485 Patent, the global control circuit is not required to

control the entire bridging circuit. The court agrees with USB Bridge that it is evident from Fig.

4 that the global control circuit does not control the entire bridging circuit. The presence of the

"ram control circuit" that controls the RAM in the bridging circuit shows that the "global control

circuit" does not control the entire bridging circuit.

USB Bridge argues that the alternative construction offered by Defendants impermissibly

limits the claims to an embodiment (Fig. 4) disclosed in the specification. "[I]t is improper to

read limitations from a preferred embodiment described in the specification—even if it is the

only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

In addition, USB Bridge argues that Defendants' alternative construction incorporating the phrase, "but cannot receive ATA/ATAPI signals from the mass storage device" impermissibly introduces negative limitations which should not be accepted absent clear disavowal, disclaimer or estoppel. Defendants have not pointed to any instance of disavowal, disclaimer, or estoppel. Further, the "global control circuit" *could* still receive ATA/ATAPI signals from the disk interface 115 when combined with the configuration parameters in the ROMIF 142 block. And since the input/output interface 140 is already adapted to send signals to the "global control circuit" (in the embodiment of Fig. 4) it is used to convey ATA/ATAPI signals as well. The court agrees that the patent teaches against incorporation of the limiting term that the global control circuit cannot receive ATA/ATAPI signals from the mass storage device."

Therefore, the court concludes **no construction of the claim term is necessary**.

14. "translate circuit" / "translate circuit [coupled to the global control circuit]"

The parties' proposed constructions of this term, as used in Claims 1, 5, 8, 11, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction needed/plain and ordinary meaning where "coupled' means "connected or linked"	Indefinite Alternatively, "circuit that does not receive 'ATA/ATAPI signals' from a mass storage device"

Defendants argue that this term is indefinite for the same reasons as articulated for terms 11, 12, and 13. Defendants argue that a person of ordinary skill in the art would understand the term "translate circuit" in the abstract, but would not understand the design of the claimed translate circuit, particularly in light of the additional components used to "convert the ATA/ATAPI signals into USB signals." Again, this is an enablement or written description argument that should not be brought at the claim construction stage. The court agrees with USB Bridge that the term is not indefinite. The court still declines to adopt USB Bridge's additional construction of the term "coupled."

Defendants' alternative construction limits a "translate circuit" to a "circuit that does not receive 'ATA/ATAPI signals' from a mass storage device. Defendants claim this is supported by one embodiment, Fig. 4, where the translate circuit is connected to the global control circuit and the disk interface. '485 Patent, 4:15–19. From the global control circuit, the arrow between the translate circuit and the disk interface only points in one direction, towards the disk interface. So, Defendants conclude that the translate circuit does not receive ATA/ATAPI signals from the mass storage device according to the direction of the arrows. However, that interpretation is directly in conflict with the specification which states that "[t]he remaining chip components, such as . . . the translate circuit (XLATE) 148 provide conversion logic and are used to buffer and convert the ATA/ATAPI signals into USB 2.0 signals." '485 Patent, 4:24–28. In order to do *any* operation on the ATA/ATAPI signals, the "translate circuit" has to be able to receive those signals. So, it would be improper to read in a limitation from one embodiment that is also inconsistent with other parts of the specification.

Defendants also point to the inconsistency in the patent of multiple elements performing the translation function. They claim that the specification and claims state that the "state

machine" performs the translation function which would make it unclear what function the "translate circuit" performs. USB Bridge argues that it is incorrect to assume that only one component performs the translation function. The "translate circuit" together with the state machine can both perform the translation function. A person skilled in the art would be familiar with this basic principle and would not find an irreconcilable conflict resulting in indefiniteness of these terms.

Therefore, the court concludes **no construction of the claim term is necessary**.

15. "a disk interface coupled to the ram control circuit and the translate circuit" / "the disk interface is configured to receive the ATA/ATAPI signals from the ATA/ATAPI interface" / "the disk interface receives ATA/ATAPI signals through an ATA/ATAPI interface" / "a disk interface coupled to the input, the ram control circuit, and the translate circuit"

The parties' proposed constructions of this term, as used in Claims 1, 5, 7, 8, 10, 11, and 16 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction necessary/plain and ordinary meaning, where "coupled" means "connected or linked"	"A circuit that receives parallel ATA/ATAPI signals from the mass storage device through the ATA/ATAPI interface and transmits them to the RAM control circuit and the memory, and receives signals from, but is not able to transmit signals to the global control circuit and the translate circuit."

USB Bridge argues that no construction is needed, and a person of ordinary skill would have no difficulty understanding these clauses. USB Bridge also argues that Defendants' construction improperly limits the claims to an embodiment disclosed in the specification and also introduced negative limitations which goes against principles of claim construction.

Defendants cannot point to any instance of clear disavowal, disclaimer, or estoppel. Rather, Defendants look to the direction of arrows in Fig. 4 to assume the disk interface cannot send signals to the global control circuit or translate circuit. It is not enough of a clear disavowal when the limitation is solely present in one embodiment. The court also declines to adopt USB Bridge's additional construction of the term "coupled."

Therefore, the court concludes **no construction of the claim term is necessary**.

16. "an ATA/ATAPI interface configured to receive an ATA/ATAPI signal from the input logic"

The parties' proposed constructions of this term, as used in Claim 7 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
"digital circuit configured to receive an input signal"	Indefinite

The arguments for this term are the same as for term 10. Defendants argue that "input logic" must mean the same thing as "ATA/ATAPI interface" because of the way Fig. 4 numeral 110 was labeled in the prosecution history and the final patent. Beyond the issues argued in term 10, Defendants claim that because "input logic" and "ATA/ATAPI interface" are equal, that if one replaces "input logic" with "ATA/ATAPI interface," then claim 7 would read "an ATA/ATAPI interface configured to receive an ATA/ATAPI signal from the ATA/ATAPI interface," which is nonsensical and therefore indefinite. USB Bridge counters that the repetitive result of replacing "input logic" and "ATA/ATAPI interface" in claim 7 is further reason why the two terms do not mean the same thing. "In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings."

CAE Screenplates Inc., 224 F.3d at 1317. The court agrees with USB Bridge that there was not a clear disavowal during prosecution history for "input logic" and "ATA/ATAPI interface" to mean the same thing. Again, the court holds the term is not indefinite, but USB Bridge's construction incorporating "digital circuit" is also not necessary.

Therefore, the court concludes **no construction of the claim term is necessary**.

17. "motherboard of the mass storage device" / "motherboard for a mass storage device" / "mass storage device motherboard"

The parties' proposed constructions of this term, as used in Claims 2, 4, 5, 6, 7, 8, 9, 10, 13, 15, 17, and 18 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required/plain and ordinary meaning	"Motherboard" means "a printed circuit assembly board to which a mass storage device is connected or on which it is mounted."

USB Bridge argues that Defendants introduce an unnecessary limitation, "printed circuit assembly board" in their proposed construction. Both experts agree that the boards *can* be printed, but the patent does not limit the term to a specific fabrication method. Nowhere in the intrinsic record is there an indication that the motherboard is "printed," and the fabrication method of the motherboard is not a disputed issue between the parties. In addition, the intrinsic evidence does not limit the board to be an "assembly" so there is no need to include that limitation. There is no real disagreement between the use of the word "circuit board" or "assembly board" so the court agrees that no change is necessary.

Therefore, the court concludes **no construction of the claim term is necessary**.

18. "secondary board"

The parties' proposed constructions of this term, as used in Claims 3, 4, 8, 9, 10, 14, 15, and 18 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required/plain and ordinary meaning	"A printed circuit assembly board that performs all the functions of the bridging circuit and is physically separate from the mass storage device motherboard, but which can be connected to or mounted on the mass storage device motherboard."

Again, Defendants introduce an unnecessary limitation, "printed circuit assembly board." Both experts agree that the boards *can* be printed, but the patent does not limit the term to a specific fabrication method. Nowhere in the intrinsic record is there an indication that the motherboard is "printed," and the fabrication method of the motherboard is not a disputed issue between the parties. In addition, the intrinsic evidence does not limit the board to be an "assembly" so there is no need to include that limitation. There is no real disagreement between the use of the word "circuit board" or "assembly board" so the court agrees that no change is necessary.

Defendants' construction also requires that the "secondary board" perform "all the functions of the bridging circuit." Defendants point to one embodiment in the specification that recites that "use of a separate, secondary board 25 to provide the bridging function, rather than an integrated motherboard, may be desirable, for instance, where integration onto the motherboard 20 of the mass storage device itself is impractical." '485 Patent, 2:63–67. USB Bridge argues that this should be rejected because it requires the "secondary board" to perform the functions of a different element on the secondary board, the "bridging circuit." Simply dismounting the bridging chip from the secondary board would result in the secondary board

being incapable of performing any bridging functions so the secondary board should not be required to perform the functions of other elements. The court agrees with USB Bridge that the secondary board should not be required to perform all the functions of the bridging circuit because it is clear that the bridging chip is what performs the functions of the bridging circuit not the secondary board.

Therefore, the court concludes **no construction of the claim term is necessary**.

19. "a bridging circuit" / "the bridging circuit is provided in a single, bridging chip" / "a bridging chip"

The parties' proposed constructions of this term, as used in Claims 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 16, 17, and 18 of the '485 Patent, are listed in the following table:

USB Bridge's Proposed Construction	Defendants' Proposed Construction
No construction required	"A circuit or set of circuits that resides on a single substrate and performs all of the buffering and conversion steps of the ATA/ATAPI to USB translation function"

USB Bridge argues that one skilled in the art would recognize that the "bridging" term refers to creating a bridge between two different types of signals. This is supported by the Abstract of the '485 Patent:

> A mass storage device motherboard or secondary board includes a bridging circuit. The bridging circuit converts signals from the mass storage device into USB signals. The bridging circuit can be provided by a chip that converts ATA/ATAPI signals into USB signals.

USB Bridge also argues that Defendants' construction renders the claim language superfluous. If "resides on a single substrate" (which essentially means "resides in a single chip") is substituted into claim 1, the claim becomes superfluous because the claim already

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requires the "bridging circuit [to be] provided in a single bridging chip." '485 Patent, 4:56–57. "A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so." *Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005).

Further, USB Bridge argues that "bridging circuit" is not purposefully limited to a single "chip" like the "bridging chip" is. A "bridging circuit" is not the same as a "bridging chip." Since claim 6 recites "wherein the bridging circuit comprises a bridging chip," it would not make sense for "bridging circuit" and "bridging chip" to mean the same thing. USB Bridge also states that in claim 1, the patentee expressly requires "wherein the bridging circuit is provided in a single, bridging chip," whereas claim 5 does not have this requirement. The court agrees that importing this limitation that a "bridging circuit" must be on a single chip would be improper.

USB Bridge also contends that it is improper to limit the "bridging" elements to solely ATA/ATAPI to USB conversion. Claim 8 does not even recite ATA/ATAPI signals at all. Rather, it recites "signals from the mass storage device" of which ATA/ATAPI signals are only one example. The court agrees that since there can be other signals besides ATA/ATAPI signals, it would be improper to limit the "bridging" elements to just ATA/ATAPI to USB signals.

Therefore, the court concludes **no construction of the claim term is necessary**.

B.   *Summary Table of Disputed Terms*

Term	Court's Construction
"ATA/ATAPI signals"	AT Attachment signals used in the physical, electrical, transport, and command protocols for the internal attachment of storage devices
"embedded commands"	Commands included in the ATA/ATAPI signals

"state machine"	**Sequential-logic system whose outputs depend on previous and present inputs**
"updating a state machine in response to embedded commands in the ATA/ATAPI signals" / "the state machine is updated in response to embedded commands in the ATA/ATAPI signals" / "the bridging circuit includes a state machine responsive to embedded commands in the ATA/ATAPI signals configured to translate the signals from the mass storage device motherboard into the USB signals" / "updating a state machine in the bridging chip in response to embedded commands in the signal from the mass storage device" / "a state machine responsive to embedded commands in the ATA/ATAPI signals"	**No construction of the claim term is necessary.**
"convert"	**No construction is necessary, but the court does not hold that "translation" is always a subset of "conversion."**
"conversion logic configured to convert the ATA/ATAPI signals into USB signals"	**Indefinite**
"converting the ATA/ATAPI signals from the mass storage device into USB signals using the bridging circuit in response to the state machine"/ "the bridging circuit is configured to translate the ATA/ATAPI signals into USB 2.0 signals in response to the state machine" / "converting the signal from the mass storage device into a USB signal in response to the state machine"	**No construction of the claim term is necessary**
"translate the [] signals"	**To transform signals from one format to another.**

"a state machine configured to translate the ATA/ATAPI signals into the USB signal" / "a state machine responsive to embedded commands in the ATA/ATAPI signals configured to translate the signals from the mass storage device motherboard into the USB signals"	**No further construction of the claim term is necessary.**
"input logic configured to receive an input signal from a read unit of the mass storage device"	**No construction of the claim term is necessary.**
"an input/output interface coupled to the serial interface engine"	**No construction of the claim term is necessary.**
"a ram control circuit coupled to the input/output interface"	**No construction of the claim term is necessary.**
"a global control circuit" / "a global control circuit coupled to the input/output interface"	**No construction of the claim term is necessary.**
"translate circuit" / "translate circuit coupled to the global control circuit"	**No construction of the claim term is necessary.**
"a disk interface coupled to the ram control circuit and the translate circuit" / "the disk interface is configured to receive the ATA/ATAPI signals from the ATA/ATAPI interface" / "the disk interface receives ATA/ATAPI signals through an ATA/ATAPI interface" / "a disk interface coupled to the input, the ram control circuit, and the translate circuit"	**No construction of the claim term is necessary.**
"an ATA/ATAPI interface configured to receive an ATA/ATAPI signal from the input logic"	**No construction of the claim term is necessary.**
"motherboard of the mass storage device" / "motherboard for a mass storage device" / "mass storage device motherboard"	**No construction of the claim term is necessary.**
"secondary board"	**No construction of the claim term is necessary.**

"a bridging circuit" / "the bridging circuit is provided in a single, bridging chip" / "a bridging chip"	**No construction of the claim term is necessary.**

IV.   Conclusion

For the above reasons, the court construes the disputed claims as noted and so **ORDERS.**
No other claim terms require construction.

IT IS FURTHER ORDERED that this case is set for a **Scheduling Conference** on **June 11, 2020, at 2:00 p.m.**, in Courtroom 7, Seventh Floor, United States Courthouse, 501 W. 5th Street, Austin, Texas 78701. If the case is not settled, the parties shall confer in an attempt to reach agreement on a schedule to follow for the remainder of the case. The court will render a scheduling order as a result of the conference.

SIGNED this **17th** day of April, 2020.

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LEE YEAKEL
UNITED STATES DISTRICT JUDGE